

PROVOCATION DISCOGRAPHY

These safety practices have been developed to highlight the important elements in the safe performance of interventional pain procedures. Adherence to these practices will help decrease the risk of preventable complications. For additional information about the indications and technical aspects that yield improved treatment outcomes, refer to the *SIS Practice Guidelines for Spinal Diagnostic and Treatment Procedures*.

PERSONNEL

- Only physicians trained in the performance and interpretation of provocation discography should perform this procedure.
- Appropriately trained personnel are needed for the operation of the fluoroscopy unit and to assist the physician.

CONTRAINDICATIONS

ABSOLUTE - LUMBAR, THORACIC, OR CERVICAL

- Patient is unable or unwilling to consent to the procedure.
- Inability to assess patient response to the procedure
- Systemic infection or local infection within the procedure field
- Pregnancy
- Uncooperative patient
- Central canal stenosis $\leq 10\text{mm}$ (e.g. congenital, disc herniation, spondylosis) at the target level – *cervical or thoracic only*
- Known esophageal diverticulum - *cervical only*

RELATIVE - LUMBAR, THORACIC, OR CERVICAL

- Allergy to medication(s) that cannot safely be mitigated by pre-treatment
- Known bleeding diathesis
- Use of antithrombotic agents
- Significant psychiatric or psychological comorbidity
- Anatomical derangements, congenital or acquired, which might compromise safe conduct of the procedure
- Immunosuppression
- Significant central canal stenosis at any level being examined as evidenced by lack of cerebrospinal fluid (CSF) surrounding the neural structures

SEDATION

- Sedation is not intrinsically necessary for provocation discography, but if employed in unique circumstances (e.g. movement disorder, cases of extreme anxiety, previous vasovagal response), the patient should remain able to communicate pain or other adverse sensations or events.
- Use of sedation may alter diagnostic conclusions.



- Use of analgesic medications (e.g. opioids) will affect perceived pain and negatively alter diagnostic results.
- The decision to use sedation should be made on a case-by-case basis.
- If the physician performing the procedure decides to administer and supervise the sedation, they should be trained and qualified to do so. In these situations, a separate healthcare provider is required to assist with the administration of the medications and monitoring of the patient.
- Resuscitation drugs, monitoring equipment, and oxygen must be available if sedation is utilized.

SAFE, ASEPTIC PRACTICES

- Strict aseptic technique should be followed at all times as it pertains to the facilities, materials, patient preparation, physician preparation, personnel, and injectate/syringe preparation under examination. Examples include, but are not limited to:
 - o Skin prepared and draped as if for a surgical procedure
 - o A face mask, cap, and sterile gloves must be worn during the procedure by all personnel in close proximity to the surgical field.
 - o Sterile cover over fluoroscope image intensifier to prevent detritus from falling on sterile field
 - o Use intradiscal, and possibly intravenous (IV), prophylactic antibiotics
 - o Disc puncture needle tips should, at no time, be touched regardless of gloving. Sterile gauze, or other technique, must be used for all needle tip manipulation (e.g. bending).
 - o Sterile single-use syringes and needles are required, and single-dose vials should be utilized when available. Centers for Disease Control and Prevention (CDC) guidelines for safe injection practices must be followed.
 - o Acquisition, storage, and utilization of medications should be in accordance with relevant governmental guidelines such as those of the CDC in the United States.

IMAGING

- Pre-procedure MRI or CT images should be reviewed by the discographer.
- Needle insertion should be performed with the x-ray beam, skin entry, and target aligned ("parallel to beam", "down the beam", "tunnel" or "gun barrel" view).
- Final needle tip position should be as close to the center of the disc as possible.
- Confirm needle tip position in both AP and lateral views prior to injection.
- The imaging technique should follow the ALARA protocols (as low as reasonably achievable) to minimize x-ray exposure for both the patient and the healthcare team.

DISCOGRAPHY PROCEDURE

- IV catheter placement is recommended if sedation, IV antibiotics, or post procedure analgesic administration are planned.

CERVICAL

- A right-sided approach should be used due to anatomical considerations regarding the esophagus.



- Use a 25 or 22G spinal needle for disc puncture.
- Inject using a 3cc syringe with short, low volume extension tubing.
- Inject using 0.1 - 0.2cc increments with light to moderate plunger pressure.
- Terminate injection with:
 - o Volume of injectate ≥ 0.5 cc
 - o Significant end plate displacement
 - o Marked resistance to injection
 - o Neurological symptoms

THORACIC

- Advance needle over the disc between the adjacent end plates, a line between the medial rib heads (lateral) and lamina (medial).
- Use a 25 or 22G spinal needle for disc puncture.
- Terminate injection with:
 - o Volume of injectate > 3.5 cc
 - o Marked resistance to injection
 - o Neurological symptoms

LUMBAR

- Use a 22 or 25G spinal needle for disc puncture.
- Terminate injection with:
 - o Volume of injectate > 3.5 cc
 - o Pressure exceeds 50 psi above opening pressure or there is marked resistance to injection
 - o Neurological symptoms

POST-PROCEDURE MONITORING/FOLLOW-UP

- Patients should be monitored for an appropriate time following the procedure depending upon the nature of the intervention and the agents utilized.
- Provide detailed oral and written discharge instructions to patients that outline:
 - o activity restrictions for the immediate post-procedure period (e.g. not to operate a motor vehicle or machinery for the remainder of the day of the procedure),
 - o potential expected side effects that may occur immediately post-procedure and in the first few days following the procedure (e.g. pain at injection site or increased index pain of a similar location and quality),
 - o symptoms that merit immediately medical attention (neurologic changes or severe pain), and
 - o when to resume usual medications and anticoagulants if discontinued for the procedure.
- Ensure patients have a follow-up plan.



SOURCES

Bogduk N, Aprill C, Derby R. Lumbar discogenic pain: state of the art review. *Pain Medicine* 2013;14:813-836.

International Spine Intervention Society. Sedation. In: Bogduk N (ed), *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Intravenous lines. In: Bogduk N (ed), *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Records. In: Bogduk N (ed,) *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Anticoagulants. In: Bogduk N (ed), *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Cervical disc stimulation (provocation discography). In: Bogduk N (ed,) *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Thoracic disc access. In: Bogduk N (ed), *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

International Spine Intervention Society. Lumbar intervertebral disc access. In: Bogduk N (ed), *Practice Guidelines for Spinal Diagnostic and Treatment Procedures*, 2nd edn. International Spine Intervention Society, San Francisco, 2013.

Landers M. Discography (Part B) Intervertebral disc access and stimulation: lumbar, thoracic, and cervical. In: Lennard T, Walkowski S, Singla A, Vivian D. (eds), *Pain Procedures in Clinical Practice* 3rd ed. Elsevier Sanders, Philadelphia, 2011.

DISCLAIMER

While these Safety Practices are intended to identify elements critical to the safe performance of interventional spine procedures, they are not intended to be inclusive of all proper methods relevant to the safe performance of spine procedures, or exclusive of other methods of care reasonably utilized to obtain the same results. Nothing contained in these documents is intended to be used as a substitute for the care and knowledge of the individual clinician. They are guidelines based on evidence-informed expert consensus. SIS makes no representation and assumes no responsibility for the accuracy of the information contained or available through this website, and such information is subject to change without notice. The clinician's independent medical judgment, given the individual patient's clinical circumstances and preferences, should always determine patient care and treatment. Practitioners are advised to consider management options in the context of their own training and background and institutional capabilities when selecting recommended treatment options. SIS is not responsible nor does it assume any legal liability or responsibility for the accuracy, completeness, clinical efficacy, or value of any such information or any apparatus, product, or process described or referenced through this website or the information contained therein.



SPINE INTERVENTION SOCIETY

SAFETY PRACTICES FOR INTERVENTIONAL PAIN PROCEDURES

MODULE 1 EPIDURAL STEROID INJECTIONS
MODULE 2.1 FACET INTERVENTIONS: MEDIAL BRANCH BLOCKS
MODULE 2.2 FACET INTERVENTIONS: INTRA-ARTICULAR (ZYGAPOPHYSIAL) JOINT INJECTIONS
MODULE 2.3 FACET INTERVENTIONS: MEDIAL BRANCH RADIOFREQUENCY NEUROTOMY
MODULE 2.4 FACET INTERVENTIONS: LATERAL ATLANTO-AXIAL JOINT INJECTIONS
MODULE 3.1 SACROILIAC INTERVENTIONS: SACRAL LATERAL BRANCH BLOCKS
MODULE 3.2 SACROILIAC INTERVENTIONS: SACROILIAC JOINT INJECTIONS
MODULE 3.3 SACROILIAC INTERVENTIONS: SACRAL LATERAL BRANCH RADIOFREQUENCY NEUROTOMY
MODULE 4.1 NEUROSTIMULATION: SPINAL CORD AND DORSAL ROOT GANGLION STIMULATION
MODULE 4.2 NEUROSTIMULATION: PERIPHERAL NERVE STIMULATION
MODULE 5 PROVOCATION DISCOGRAPHY
MODULE 6 VERTEBRAL AUGMENTATION

THE INTERVENTIONAL SPECIALISTS' FREE RESOURCE TO HELP DECREASE THE RISK OF PREVENTABLE COMPLICATIONS

For additional information about the indications and technical aspects that yield improved treatment outcomes, refer to the *SIS Practice Guidelines for Spinal Diagnostic and Treatment Procedures*.

